

XXIX.—On "Aulacochelys," Lydekker, and the Systematic Position of *Anosteira*, Leidy, and *Pseudotrionyx*, Dollo.
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In the January number of this Journal Mr. R. Lydekker* established a genus *Aulacochelys* for *Trionyx circumsulcatus*, Owen.

The character of this genus consists in the "presence of a deep groove in the free border of the costals," and in this it is said to differ "from all species of *Trionyx*."

At first we may ask, Is a groove in a portion of a dermal ossification of generic value? and may safely answer that it is not.

Such a groove is very common at the outer end of the united hyo- and hypoplastra in the Trionychidæ; and this fact alone contradicts the generic value of such a structure. This groove may be present or absent in the same species; it is generally present in old individuals. But if we find it even on the pleuralia (costals) of living Trionychidæ, it is simply individual and without any systematic value whatever. In old specimens of *Aspidonectes ferox*, Schn., and of *Aspidonectes muticus*, Les., this groove is very well developed. In other specimens of the same species and different Trionychidæ I find no trace of it.

The genus *Aulacochelys*, Lydekker, therefore is not entitled to recognition as being based upon such trivial characters.

In the same paper a new species of *Anosteira* is proposed and named *A. anglica*. It is based on one anterior marginal and a xiphiplastral. This form cannot be distinguished from the *Anosteira radulata*, Cope †, described in 1871 and figured in Prof. Cope's ‡ well-known work on the Vertebrata of the Tertiaries of the West.

It seems that Mr. Lydekker was not aware of the existence of another species of *Anosteira* except Leidy's type.

In the same number of this Magazine § I have remarked that *Anosteira* belongs either to the Staurotypidæ or Cino-

* Lydekker, R., "Preliminary Notice of new Fossil Chelonia," Ann. & Mag. Nat. Hist. Jan. 1889, p. 53.

† Cope, E. D., "Descriptions of new Extinct Reptiles from the Upper Green River Eocene Basin, Wyoming," Proc. Am. Phil. Soc. vol. xii. Jan. 1871–Dec. 1872: Philadelphia, 1873 (paper published Oct. 12, 1871).

‡ Cope, E. D., 'The Vertebrata of the Tertiary Formations of the West,' Book I., Washington, 1883 (published Jan. 1885), p. 128, pl. xviii. figs. 18, 19.

§ Baur, Dr. G., "The Systematic Position of *Meiolania*, Owen," Ann. & Mag. Nat. Hist., Jan. 1889, pp. 58, 59.

sternidæ. I now give a more detailed account of my reasons. When Prof. Leidy * gave the first notice of this interesting fossil he said:—"None of the plates exhibit scute impressions, generally so evident in the Emydes." But in his full description he states †:—"A few of the plates exhibit obscure lines, but I am uncertain as to whether they accord with the areas of the scutes."

Prof. Leidy does not give to *Anosteira* a definite position in the system. Prof. Cope ‡ places the form among the Chelydridæ, and observes:—"This genus must be regarded as an interesting intermediate type connecting *Pleistomenus* and *Chelydra* or *Dermatemys*. In skin and sculpture it is identical with the first, in carapace and plastron most like *Chelydra*" (p. 127). This view is adopted by Dollo §, who places *Anosteira* together with his *Pseudotrionyx* among the Chelydridæ.

Lydekker, in some notes on this paper, held the opinion that *Pseudotrionyx* might perhaps be referred to the Trionychidæ (Geol. Mag. 1886, p. 521); but this view was abandoned in 1887, when Boulenger and Lydekker|| declared that it may probably be regarded as belonging to a distinct family from the absence of epidermal shields. This family was called the Pseudotrionychidæ by Boulenger ¶, containing *Pseudotrionyx* and *Anosteira*, and placed near the Cinosternidæ.

The absence of dermal scutes seems to be generally admitted. But in fact they are not entirely missing. The marks observed by Leidy are really marks produced by the impression of scutes. They are well shown at the posterior peripherals (marginals), and especially on the pygal, in a specimen of *Anosteira ornata*, Leidy, in the Yale College Museum. I could not find any marks on the plastron; but it seems probable that scutes existed all over the shell. The impressions on the plastron of the Cinosternidæ, particularly in *Monochelys odorata*, are already insignificant.

I have shown (Osteol. Notizen über Reptilien, Fortsetzung vi.) that the Staurotypidæ and Cinosternidæ are the only known living Testudinata which have *ten* peripherals, eight

* Proc. Ac. Nat. Sci. Philad. 1871, pp. 102, 103.

† Leidy, Joseph, 'Contributions to the Extinct Vertebrate Fauna of the Western Territories,' Washington, 1873, p. 175.

‡ Cope, E. D., 'The Vertebrata of the Tertiary, &c.,' p. 112.

§ Dollo, L., "Première note sur les Chéloniens du Bruxellien (Éocène Moyen) de la Belgique," Bull. Mus. Roy. Hist. Nat. Belg. tome iv. 1886, p. 96.

|| Lydekker, R., and G. A. Boulenger, "Notes on Chelonia from the Purbeck, Wealden, and London Clay," Geol. Mag. June 1887, p. 274.

¶ 'Encyclopædia Britannica,' 9th ed. vol. xxiii. 1888, p. 457.

of which (three to ten) are connected with the ends of the ribs. We find the same in *Anosteira* and *Pseudotrionyx*. In all the Staurotypidæ and Cinosternidæ one or more of the posterior neurals are absent, and in all only one postneural is developed. In *Anosteira* and *Pseudotrionyx* there are only seven neurals and one postneural.

The form of the xiphiplastron in *Anosteira* is like that of the Cinosternidæ (especially *Monochelys*); but whether the endoplastron was present or not is still a question. The Staurotypidæ have this element; in the Cinosternidæ it is missing. Prof. Cope* observes that in *Staurotypus* the endoplastron (mesoplastron, Cope) is missing.

But after examination of Prof. Cope's originals I find that there is a well-developed endoplastron, as mentioned by Günther and Boulenger. Le Conte† has stated that a rudiment of the endoplastron is present in the young Cinosternidæ. I find in specimens of *Monochelys odorata* and *Cinosternum pennsylvanicum* (length of plastron 15 millim.), which I owe to the kindness of Prof. A. Agassiz, no trace of an endoplastron. The epiplastra are separated from the hypoplastra in the median line, the xiphiplastra from the hypoplastra, forming two considerable fontanelles.

Hyo- and hypoplastra are suturally united, without any fontanelle in the middle.

The plastron of the Cinosternidæ and probably the Staurotypidæ develops in a way totally different from the other Testudinata, so far as I am aware. We always find in them a median fontanelle in the young animal. Until it is ascertained whether *Anosteira* and *Pseudotrionyx* have an endoplastron or not, it is impossible to determine the correct systematic position. Undoubtedly these forms are very near to the families mentioned.

It is probable that the nuchal had well-developed lateral processes; I find a groove for such a process on the second peripheral, but none on the first. I have not seen, however, a complete nuchal. In *Pseudotrionyx* there is no trace of a protuberance on the eighth pleural (fig. of Dollo). This is present in the Cinosternidæ, where the ilium is connected; I do not know how the Staurotypidæ are in this regard, having no skeleton before me now. Until the endoplastron-question

* Cope, E. D., "Catalogue of Batrachians and Reptiles of Central America and Mexico," Bull. Un. Stat. Nat. Mus. no. 32, Washington, 1887, p. 23.

† Le Conte, John, "Description of four new Species of *Kinosternon*," Proc. Acad. Nat. Sci. Philad. vol. vii. 1854-55: Philadelphia, 1856, p. 186.

is solved, *Anosteira* and *Pseudotrionyx* may be placed (provisionally following Boulenger) in a separate family.

The question now arises, what is *Apholiclemys* of Pomel*? We are still restricted to the very short original description of 1847, nothing new having been published since this time. Pomel's words are:—"Mr. Lévêque a recueilli dans le calcaire grossier, à Cuise-la-Motte, près Compiègne, des tortues sans écailles, ou trionyx, qui ont un caractère remarquable dans la présence de pièces marginales bien plus développées que dans les cryptopus, avec un plastron, comme dans les gymnopus. C'est un liaison entre les émydes et les trionyx, bien plus évidente que par le trestosternum, puisque certaines émydes vivantes ont aussi ces granulations de la surface. Ici c'est un carapace à laquelle il ne manque plus que des écailles pour être celle d'une émyde à surface tuberculée; je donne à ce nouveau sous-genre le nom d'Apholiclemys, renfermant probablement deux espèces (*A. sublevis* et *A. granosa*)."

Gervais † calls these forms "*Trionyx granosa*" and "*Trionyx lavigata*," without giving any reasons, and says that according to Mr. Graves they are found in "les sables glauconicieux moyens de Cuise-la-Motte et de Pierrefonds." The "whereabouts" of the type specimens seem to be unknown. I am obliged to Prof. A. Gaudry for the following communication (April 23, 1888):—"On m'a dit que les échantillons de la collection Lévêque sur lesquels M. Pomel dit avoir fait son travail ont été dispersés."

It is possible that *Apholiclemys* may be identical with *Anosteira* or *Pseudotrionyx*, and it would be very interesting if the remains of this form could be figured and redescribed. That *Pseudotrionyx* is a different genus from *Anosteira* seems to be certain. In *Pseudotrionyx* a small "fontanelle" is present between the carapace and plastron ("échancrure naturelle, reste d'une fontanelle latérale," Dollo). Is it not possible that this place is filled up by a mesoplastron?

The Cinosternidæ and Staurotypidæ are found at present only in the northern parts of South America, in Central America, and North America; the discovery of such or allied forms in the Eocene of Europe is of great interest ‡.

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* Pomel, "Note sur les Mammifères et les Reptiles Fossiles des Terrains éocènes de Paris inférieurs au dépôt Gypseux," Supplément à la Bibliothèque Univ. de Genève, Arch. des Sc. phys. et nat. tome iv. p. 328 (Genève, Paris, 1847).

† Gervais, Paul, 'Zoologie et Paléontologie française,' deuxième éd., Paris, 1859, p. 440.

‡ I do not know whether *Dithyrosternon*, Pictet, belongs here, not having seen the figures of this fossil.